Chapter 6

Local Treatment Plants

At the request of Vashon Sewer District and the City of Carnation, and in accordance with RWSP policies, King County extended its service area to meet specific public health needs and to help manage the environmental impacts of growth in these communities. Since 1999, King County has managed and operated the Vashon Treatment Plant for the Vashon Sewer District. Upgrades to the plant will be complete in 2006. In 2002, the City of Carnation contracted with King County to design, build, and operate a new wastewater treatment plant. Construction of the Carnation Treatment Plant will be complete in late 2007.

This chapter summarizes the progress made in 2005 on the Vashon Treatment Plant and Carnation Treatment Plant projects. Information on activities planned for 2006 is also provided.

6.1 Vashon Treatment Plant

Since 1999, the county has carried out several steps to improve the Vashon Treatment Plant. It has extended the marine outfall farther into Puget Sound and completed interim upgrades to improve the plant's performance and compliance with NPDES (National Pollution Discharge Elimination System) permit requirements.[1]

Further upgrades are in progress to increase plant capacity and enhance its backup systems. Improvements include new headworks, an oxidation ditch, two secondary clarifiers, a stormwater detention tank, an administration building, and an electrical building. The upgrade is funded in part by loans from the Public Works Trust Fund, the Washington State Department of Ecology (Ecology), and the U.S. Environmental Protection Agency (EPA). Completion of this project will allow the plant to reliably meet regulatory requirements and to protect human health and the environment. See Figure 6-1 for a treatment plant vicinity map.

6.1.1 Project Status

Construction in 2005 got off to a slow start because of the discovery of contaminated surface soils on site. The contaminants were likely deposited by fallout from the smokestacks of the Asarco Copper Smelter in Ruston, which operated from 1890 to 1996. After a soil management plan was developed and implemented, construction resumed in April 2005.

[1] NPDES permits are issued by the Washington State Department of Ecology and set limits on the quality and quantity of effluent (treated wastewater) discharged from point sources such as treatment plants, CSOs, and industrial facilities.

Project accomplishments in 2005 include the following:

- A pipe bridge across the ravine between the old and new plant site was constructed. The sensitive ravine area will be restored with native plants.
- Major site and structural work, including a substantial amount of the concrete placed for the stormwater detention tank and clarifiers, was completed.
- The new siphon was completed.

6.1.2 Schedule for 2006

The Vashon Treatment Plant upgrade is expected to be complete by fall 2006. The application to renew the current NPDES permit based on the upgraded facility was submitted to Ecology in early 2006. The Wastewater Treatment Division (WTD) is under a compliance order with Ecology to have the plant in operation in the first quarter of 2007 and is on schedule to meet this deadline.

Visit the project Web site for more information: http://dnr.metrokc.gov/wtd/vashon/

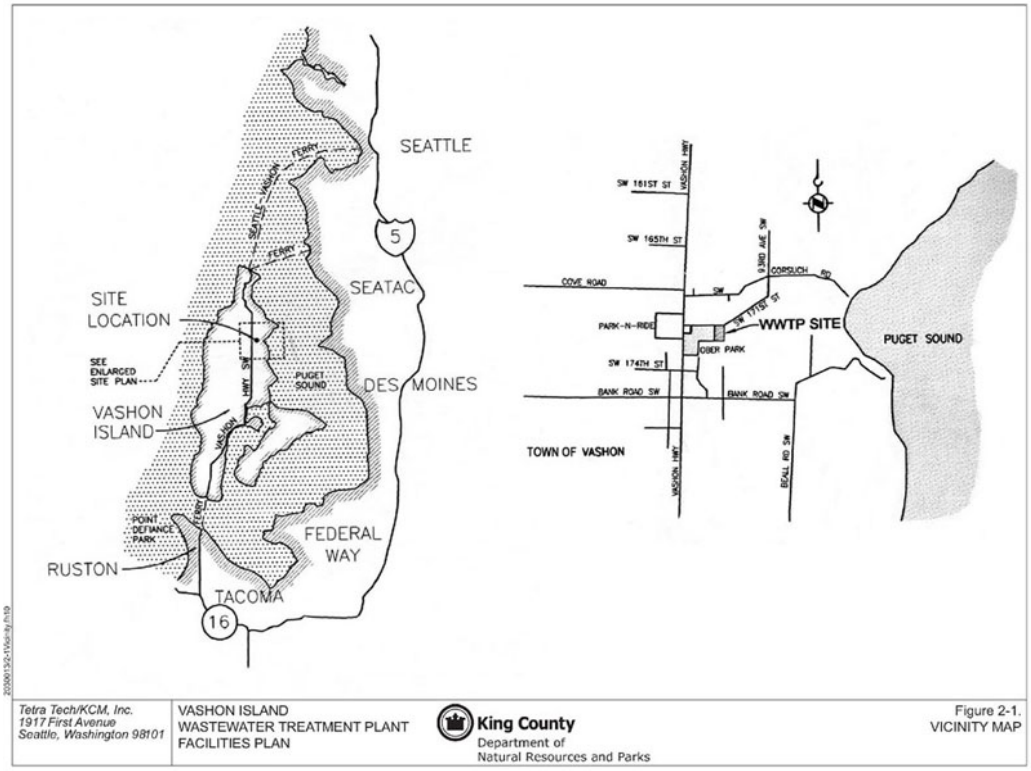

Figure 6-1. Vashon Wastewater Treatment Plant Vicinity Map

6.2 Carnation Treatment Plant

The City of Carnation decided to replace on-site septic systems with a new wastewater treatment facility and collection system to better protect public health and the environment, achieve the city's comprehensive plan goals, and maintain and enhance community livability. The city will design and build the local wastewater collection system. It has contracted with King County to design, build, operate, and maintain a new treatment plant and associated discharge facilities. King County is purchasing the approximately 2-acre plant site from the city. A 12-inch-diameter effluent pipeline approximately 1.6 miles long will be built from the treatment plant to a discharge outfall into the Snoqualmie River at the Carnation Farm Road Bridge. Figure 6-2 shows the location of the Carnation treatment facilities.

Construction will begin in mid-2006, and the treatment plant is expected to begin operating in January 2008. The plant will use membrane bioreactor technology (MBR), which produces a higher quality effluent than effluent produced by typical secondary treatment processes. At startup, the plant will have the capacity to treat a maximum daily flow of about 430,000 gallons of wastewater per day. The average daily flow capacity of the plant at startup will be 210,000 gallons of wastewater per day.

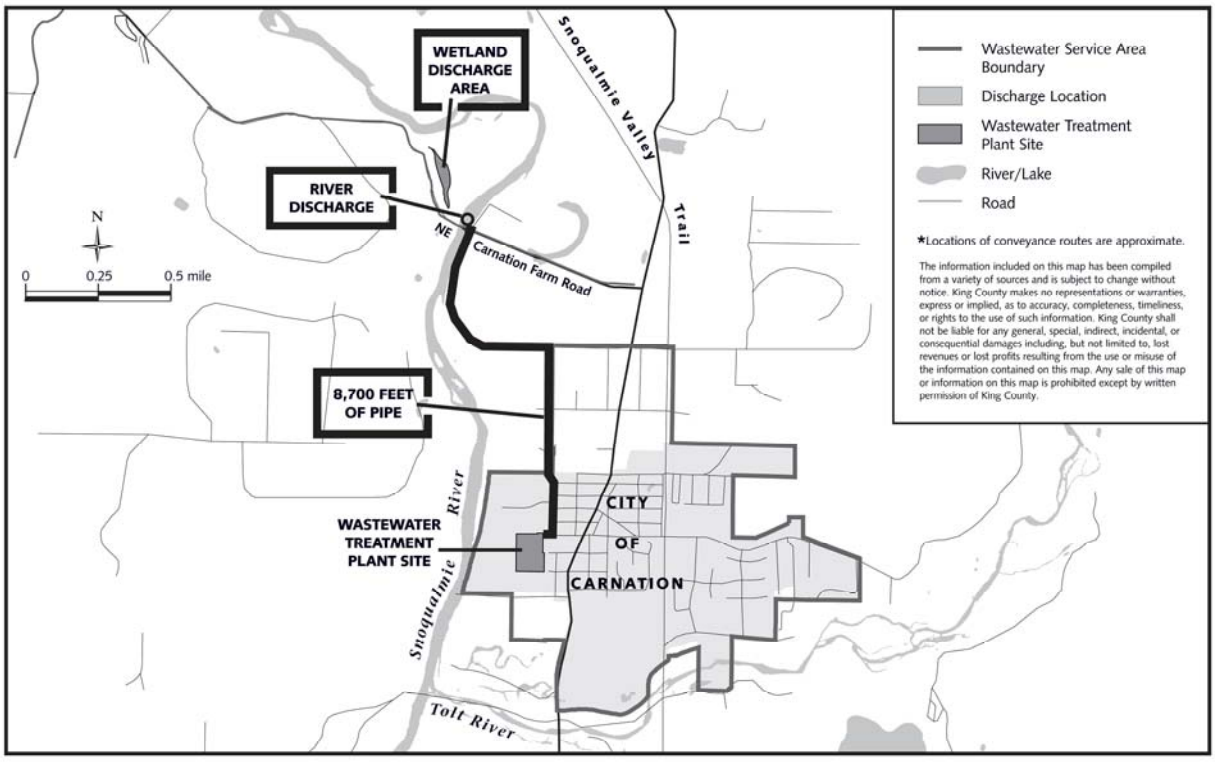

Figure 6-2. Location of Carnation Treatment Facilities

6.2.1 Project Status

Several milestones were achieved in 2005:

- **Selection of the treatment plant design.** Public meetings were held to discuss treatment plant design options. Before making a design recommendation, the City of Carnation considered comments received, aesthetics, and costs. In June 2005, the city recommended that the county move forward with a barn-like building design.
- **Moving forward on discharge options.** The county is obtaining permits for a Snoqualmie River outfall at Carnation Farm Road Bridge and continues to pursue a wetland enhancement discharge at the Chinook Bend Natural Area. Late in 2005, King County sought the support of the Snoqualmie Tribe, which was granted after the county agreed to a wetland discharge. To resolve an appeal of the shoreline permit, the county further committed to accelerate the timing of the wetland discharge. The wetland discharge is expected to come online as soon as the treatment plant successfully goes through its startup procedures and is operating effectively. The county will also continue to consider other water reuse opportunities that may develop in the Carnation area.
- **Issuance of facilities plan.** A facilities plan was prepared in accordance with Washington Administrative Code 173-240 for submittal to Ecology. Ecology approved the plan on October 31, 2005. The approved plan demonstrates how the siting and design of the Carnation Treatment Plant will meet the applicable guidelines, regulations, and approval requirements for the issuance of a discharge permit. In addition, the facilities plan serves as a comprehensive guide to the project. This plan is available on the Web at http://dnr.metrokc.gov/wtd/carnation/library/FacilityPlan/02PurposeScope.pdf
- **Completion of the National Environmental Policy Act (NEPA) Process.** Because federal funds will be used to pay for a part of the Carnation wastewater treatment facilities, the facility is subject to NEPA review. EPA prepared an Environmental Assessment (EA) and issued a Finding of No Significant Impact (FONSI) for the proposed project in fall 2005. The EA and FONSI can be found at http://dnr.metrokc.gov/wtd/carnation/library.htm#environmental
- **Permitting**. Significant progress was made in 2005 toward obtaining construction permits for the treatment plant.
- **Design.** The 30 percent and 60 percent design submittals were completed for the treatment plant.

6.2.2 Schedule for 2006

Final design and permitting activities for the Carnation Treatment Plant are expected to be complete by spring 2006. The county plans to complete the purchase of the plant site in early 2006 and acquire the necessary easements for the discharge pipeline. Construction of the treatment plant will begin in fall 2006 and continue through 2007. The facility is expected to begin startup in late 2007 and to start operating in 2008.

Visit the project Web site for more information: http://dnr.metrokc.gov/wtd/carnation/

Chapter 7

Odor Control Program

The RWSP includes policies to guide King County in achieving its goal of preventing and controlling nuisance odor occurrences at all wastewater treatment plants and associated conveyance facilities. The policies also call for implementation of an odor prevention program that goes beyond traditional odor control.

The RWSP reporting requirements call for an annual report on the status of the odor prevention policies and projects, including a summary of odor complaints. This chapter meets those reporting requirements. The summary of odor complaints is provided as Appendix B.

This chapter presents activities completed in 2005 to implement odor control improvements at the West Point and South Treatment plants. It then describes the odor control improvements planned for conveyance system facilities and the odor control design planned for the Brightwater System. The last section of the chapter describes the odor control activities planned for 2006.

7.1 Phased Retrofit of the West Point and South Plants

The RWSP odor control policies, as established via Ordinance 14712, require implementation of phased improvements at the West Point and South Treatment plants to control the most significant potential odor sources first. To that end, the Wastewater Treatment Division (WTD) has undertaken projects at each plant to identify and implement changes to existing odor control systems and to install new systems.

At the West Point Plant, design on improvements to the existing odor scrubber system is complete and modifications are expected to be substantially complete by the end of 2006. Changes to the division channel ventilation system were also designed and completed in 2005.

At the South Plant, WTD has completed final design of covers for each first pass of the four aeration basins and of covers for the return activated sludge channel. Installation of the covers will begin in 2006 and is expected to be complete in mid-2007. Because the aeration basins need to be taken out of service while the covers are installed, delays in the project schedule are possible. The amount of time that the aeration basins can be offline depends on wet-weather flow volumes.

7.2 Conveyance System Upgrades

RWSP policies call for conveyance facilities that pose nuisance odor problems to be retrofitted with odor prevention systems as soon as such odors occur, subject to technical and financial feasibility. As shown in Table 7-1, several projects are under way to improve odor problems in the conveyance system. The type of control technology and the anticipated completion dates are also provided.

Table 7-1. Conveyance System Upgrades with Odor Control Components

Facility	Odor Control Technology	Anticipated Completion Date
Hidden Lake Pump Station	Carbon bed odor scrubber & chemical injection	4th quarter 2008
Kenmore Lakeline	Carbon bed odor scrubber & chemical injection	4th quarter 2008
Lake City Regulator Station	Replacement of phoenix/carbon scrubber with bioscrubber	4th quarter 2009
University Regulator Station	Carbon bed odor scrubber	3rd quarter 2007
Interbay Pump Station	Carbon bed odor scrubber	4th quarter 2010
King Street Regulator Station Odor Control	Carbon bed odor scrubber	4th quarter 2008
53rd Avenue Pump Station	Carbon bed odor scrubber	3rd quarter 2008
Juanita Bay Pump Station	Carbon bed odor scrubber & chemical injection	2nd quarter 2008
Kirkland Pump Station	Carbon bed odor scrubber	4th quarter 2009
Bellevue Pump Station	Carbon bed odor scrubber & chemical injection	4th quarter 2008
Eastside Interceptor	Chemical (nitrate) injection	4th quarter 2007
Soos Creek Pump Station & Pipeline	Carbon bed odor scrubber & chemical injection	4th quarter 2020

7.3 Brightwater Odor Control System Design

The Brightwater System will incorporate odor control systems based on proven technologies that will comply with the High/New Plant odor prevention level referenced in Attachment A of Ordinance 14712. Pilot studies at the South Treatment Plant were conducted to test the feasibility of using biologically based odor scrubbers in lieu of some the chemical scrubbers originally envisioned for the Brightwater odor control systems. Testing showed that the same level of odor control could be attained more economically if biological scrubbers were to replace two of the three chemical scrubber stages originally designed. The final odor control system design includes biological, chemical, and carbon odor scrubber stages that meet the goal of no odors at the property line and the other requirements contained in Ordinance 14712.

7.4 Schedule for 2006

WTD will continue to implement odor control improvements in accordance with RWSP policies. The following activities are planned for 2006:

- Complete the modifications to the odor control scrubber system at West Point Plant.
- Install aeration basin covers at South Plant; this project will be completed in 2007.
- Continue to design and implement odor control improvements to conveyance system facilities that are listed in Table 7-1 of this chapter.
- Complete an Odor and Corrosion Control Plan. This plan will identify where odor or corrosion problems are occurring, describe the sources if known, and propose solutions. In the *2004 RWSP Annual Repor*t, this plan was referred to as the Odor Control Comprehensive Plan.

Visit the Odor Control Program's Web site for more information:
http://dnr.metrokc.gov/wtd/odorcontrol/